

TRANSLATION

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference DK-245-PCT	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/JP2004/017023	International filing date (day/month/year) 16.11.2004	Priority date (day/month/year) 20.11.2003	
International Patent Classification (IPC) or national classification and IPC C23C14/24, H05B3/14			
Applicant DENKI KAGAKU KOGYO KABUSHIKI KAISHA			

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>

<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>
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Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2004/017023

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

 - international search (Rule 12.3 and 23.1(b))
 - publication of the international application (Rule 12.4)
 - international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the **elements** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

the international application as originally filed/furnished

the description:

pages _____ as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

the claims:

nos. _____ as originally filed/furnished

nos.* _____ as amended (together with any statement) under Article 19

nos.* _____ received by this Authority on _____

nos.* _____ received by this Authority on _____

the drawings:

sheets _____ as originally filed/furnished

sheets* _____ received by this Authority on _____

sheets* _____ received by this Authority on _____

a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. The amendments have resulted in the cancellation of:

the description, pages _____

the claims, nos. _____

the drawings, sheets/figs _____

the sequence listing (*specify*): _____

any table(s) related to sequence listing (*specify*): _____
4. This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

the description, pages _____

the claims, nos. _____

the drawings, sheets/figs _____

the sequence listing (*specify*): _____

any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/JP2004/017023Box No. V **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-16	YES
	Claims		NO
Inventive step (IS)	Claims	1-16	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-16	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Document 1: JP 50-161505 A (Shigeru KURIHARA), 27

December 1975

Document 2: Microfilm of the specification and drawings
annexed to the request of Japanese Utility
Model Application No. 041459/1968 (Laid-open
No. 002762/1972) (Toray Industries, Inc.),
29 January 1972

Document 3: JP 60-086270 A (Denki Kagaku Kogyo Kabushiki
Kaisha), 15 May 1985

Document 4: JP 2002-097565 A (Dainippon Printing Co.,
Ltd.), 02 April 2002

Document 5: JP 06-298566 A (Denki Kagaku Kogyo Kabushiki
Kaisha), 25 October 1994

(1) The inventions set forth in claims 1 to 16 are not disclosed in any of the documents that are cited in the international search report; therefore, the inventions in question are novel and involve an inventive step.

Document 1 (fig. 3) illustrates a configuration wherein the surface of a ceramic vacuum deposition boat that comprises titanium diboride and boron nitride is provided with a plurality of recesses and projections that extend in the conduction direction and in the

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/JP2004/017023Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

direction orthogonal thereto; however, document 1 does not delimit the widths, the depths (heights) or the lengths of the recesses or the projections. Furthermore, the purpose of forming the recesses and the projections in the invention disclosed in document 1 is different from the purpose of forming the recesses and the projections in the invention set forth in the present application, and thus it cannot be said to be obvious for a person skilled in the art to configure so that the widths, the depths (heights) and the lengths of the recesses and the projections conform to the numerical ranges that are set forth in claim 1 of the present application.

In addition, document 2 discloses a crucible for use in a direct heating method, wherein grooves with a depth of 0.1 to 5.0 mm are provided to the inner surface of the crucible at intervals of 0.1 to 2.0 mm; however, the grooves are provided to the crucible in order to resolve the problems that are associated with a direct heating method, and not the problems that are associated with a resistance heating crucible. Such being the case, it cannot be said to be obvious for a person skilled in the art to employ the crucible disclosed in document 2 in a resistance heating method.

In addition, documents 3 to 5 do not disclose the feature wherein the grooves are oriented in directions that are not parallel to the conduction direction of the metal vaporization heating element, and thus it cannot be considered to be easy for a person skilled in the art to derive the inventions set forth in the present application from the documents in question.

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

(1) It is unclear specifically what manner of groove is being described by the disclosure "one or more grooves oriented in a direction that is not parallel to the conduction direction" in claim 1. That is to say, the scope of the abovementioned disclosure includes a single groove oriented in a direction that is not parallel to the conduction direction; however, it is unclear whether the scope of the abovementioned disclosure includes a single continuous groove with sections oriented in directions that are parallel to the conduction direction and sections oriented in directions that are not parallel to the conduction direction, like in the configuration illustrated in fig. 3.

(2) The description (comparative example 4) indicates that a "boat was prepared in the same manner as in example 1, except that the grooves were formed at intervals of 3.0 mm," and goes on to indicate that the boat in question does not exhibit the effects that are exhibited by the inventions set forth in the present application. Therein, said example demonstrates that there are configurations having the groove widths, the groove depths and the groove lengths set forth in claim 1 which do not exhibit the effects that are exhibited by the inventions set forth in the present application; consequently, the relationship between the desired effects and the metal vaporization heating element that is set forth in the claims cannot be considered to be fully supported by the disclosures in the description.